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 US

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 US

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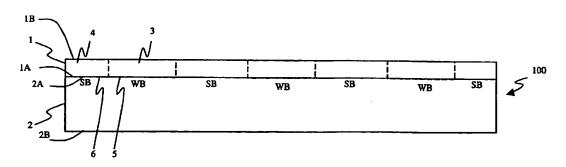
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		PCT/US (	)2/15864		
A. CLASSI IPC 7	FICATION OF SUBJECT MATTER B81C1/00 H01L21/78				
According to	o International Patent Classification (IPC) or to both national classific	cation and IPC	·		
B. FIELDS	SEARCHED				
Minimum do IPC 7	ocumentation searched (classification system followed by classificat $B81C - H01L$	ion symbols)			
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	ata base consulted during the International search (name of data be ternal, WPI Data, PAJ, INSPEC, COMP	•	sed)		
C. DOCUM	ENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the re	levant passages	Relevant to daim No.		
X	EP 0 938 129 A (CANON KK) 25 August 1999 (1999-08-25) figures 1-3,5,6,11 paragraphs		1-31,34, 40-45		
A	'0038!-'0059!,'0068!-'0079!,'011; 	32,33, 35-39			
		-/			
X Furth	ner documents are listed in the continuation of box C.	X Patent family members are list	ed in annex.		
"A" document defining the general state of the art which is not considered to be of particular relevance  "E" earlier document but published on or after the international filing date  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means  "P" document published prior to the international filing date but		'T' later document published after the international filing date or priority date and not in conflict with the application but died to understand the principle or theory underlying the invention  'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  '&' document member of the same patent family			
	August 2003	Date of mailing of the international s	earch report		
	nalling address of the ISA European Patent Office, P.B. 5818 Patentiaan 2	Authorized officer			

### INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/US 02/15864

	101/03 02/19804
Citation of document, with Indication, where appropriate, of the relevant passages	Relevant to claim No.
GUI C ET AL: "Selective wafer bonding by surface roughness control" JOURNAL OF THE ELECTROCHEMICAL SOCIETY, APRIL 2001, ELECTROCHEM. SOC, USA, vol. 148, no. 4, pages G225-G228, XP001090843 ISSN: 0013-4651 cited in the application figures 2-6	1-17, 19-30, 32,41, 42,44,45
paragraphs Selective:, Arteloations:	18,31, 33-40,43
FR 2 771 852 A (COMMISSARIAT ENERGIE ATOMIQUE) 4 June 1999 (1999-06-04)	1-15, 17-30, 34,36, 37,41, 44,45
column 4, line 11 -column 9, line 17 column 10, line 30 -column 15, line 6	
	16, 31-33, 35, 38-40, 42,43
EP 0 793 263 A (CANON KK) 3 September 1997 (1997-09-03)	1-10, 13-16, 19-31, 41,42, 44,45
figures 1-13 column 13, line 22 -column 48, line 29	11,12, 17,18, 32-40,43
FR 2 758 907 A (COMMISSARIAT ENERGIE ATOMIQUE) 31 July 1998 (1998-07-31) cited in the application	1-15, 17-27, 30,34, 36,41, 44,45
figures 3A-3D page 11, line 3 -page 12, line 18	16,28, 29, 31-33, 35, 37-40, 42,43
	GUI C ET AL: "Selective wafer bonding by surface roughness control" JOURNAL OF THE ELECTROCHEMICAL SOCIETY, APRIL 2001, ELECTROCHEM. SOC, USA, vol. 148, no. 4, pages G225-G228, XP001090843 ISSN: 0013-4651 cited in the application figures 2-6 paragraphs 'SELECTIVE!, 'APPLICATIONS!  FR 2 771 852 A (COMMISSARIAT ENERGIE ATOMIQUE) 4 June 1999 (1999-06-04)  figures 1-4 column 4, line 11 -column 9, line 17 column 10, line 30 -column 15, line 6  EP 0 793 263 A (CANON KK) 3 September 1997 (1997-09-03)  figures 1-13 column 13, line 22 -column 48, line 29  FR 2 758 907 A (COMMISSARIAT ENERGIE ATOMIQUE) 31 July 1998 (1998-07-31) cited in the application  figures 3A-3D

### INTERNATIONAL SEARCH REPORT

information on patent family members

Inte: nal Application No
PCT/US 02/15864

				l	_	
Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 0938129	Α	25-08-1999	CN	1228607	A	15-09-1999
			EP	0938129		25-08-1999
			JР	3031904	<b>B2</b>	10-04-2000
			JP	11317509	A	16~11-1999
			SG	81964	A1	24-07-2001
			TW	437078	В	28-05-2001
			US	2002093047		18-07-2002
			US	6342433	B1	29-01-2002
FR 2771852	A	04-06-1999	FR	2771852		04-06-1999
			EP	0923123		16-06-1999
			JP	11317577		16-11-1999
			US	6159323	A	12-12-2000
EP 0793263	A	03-09-1997	JP	3293736		17-06-2002
			JP	9237884		09-09-1997
			CA	2198552		28-08-1997
			CN	1169025		31-12-1997
			EP	0793263		03-09-1997
			KR	238571		15-01-2000
			SG	55280		21-12-1998
			US	2003087503		08-05-2003
			US	6294478		25-09-2001
			US	2001024876		27-09-2001
		رد دار باید در روی و بردی کا در دارد بردی بری کماند	US	2001053607	A1	20-12-2001
FR 2758907	A	31-07-1998	FR	2758907		31-07-1998
			DE	69807054		12-09-2002
			DE	69807054		17-04-2003
			EP	0972304		19-01-2000
			WO	9833209		30-07-1998
			JP	2001508943		03-07-2001
			US	6316333	ŔΙ	13–11–2001